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10/667,340	09/23/2003	Hidehito Iisaka	117281	9285

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	**PAPER NUMBER**
2675	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/667,340	IISAKA, HIDEHITO	
	Examiner	Art Unit	
	Seokyun Moon	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *Nov,Aug05, Sep03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 11** and **13** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant discloses the claim limitation, "*...two gate-output pulses are simultaneously output to positions...*" in claim 11 and "*...two gate-output pulses are output at the same time to positions...*" in claim 13. However, such claim limitations regarding the operation or driving sequence of the gate-output pulses are not possible to be performed in the structure of the display driver disclosed in the drawings [*Figs. 5, 6, 16, and 17*].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-10**, **12**, and **14-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Negishi et al. (U.S. Pat. No. 5,907,314, herein after referred to as "Negishi") in view of Nose et al. (U.S. Pat. No. 6,819,311 B2, herein after referred to as "Nose").

As to **claim 1**, Negishi [*Fig. 11*] teaches a liquid crystal device ("*liquid-crystal display apparatus*") comprising:

plural data lines ("*a plurality of upper signal electrodes* $Y_1, Y_2, \ldots, Y_N$" and "*a plurality of lower signal electrodes* $Y_{11}, Y_{22}, \ldots, Y_{NN}$")

plural scanning lines ("*a plurality of upper scanning electrodes* $X_1, X_2, \ldots, X_M$" and "*a plurality of lower scanning electrodes* $X_{M+1}, X_{M+2}, \ldots, X_N$") intersecting the data lines;

pixels connected to said data lines and said scanning lines; [*Col. 20 Lines 34-63*]

a driver section ([*Fig. 10*] and [*Fig. 11*]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal electrode drive circuit 113*", "*scanning electrode drive circuit 110*", and "*video signal generator 9*") which supplies to each of said plural data lines an image signal for which the polarity is inverted into a positive polarity potential or a negative polarity potential, for each unit period ("*half-field interval*") [*Fig. 16*] [*Col. 26*

Lines 39-45 and *Col. 54-61*], and which supplies for each one horizontal period plural pulse signals which each rise at a timing, to each of said plural scanning lines while skipping one part of said plural scanning lines;

wherein driving by said driver section is performed [*Fig. 16*] such that in any one horizontal period, plural scanning lines to which is supplied a pulse signal rising at a timing corresponding to an application period of a positive polarity potential among said image signals are adjacent to each other, and plural scanning lines to which is supplied a pulse signal rising at a timing corresponding to an application period of a negative polarity potential among said image signals are adjacent to each other [*Col. 26 Lines 39-45* and *Col. 54-61*].

Negishi does not teach a driver section supplying for each one horizontal period plural pulse signals which of each rise at a different timing, to each of plural scanning lines.

However, Nose [*Fig. 1*] teaches a method of driving each of a plural scanning lines ("*scanning lines 2*") at a different timing and driving each of a plural data lines ("*signal lines 3*") sequentially corresponding to the different driving timing for each of the plural scanning lines [*Col. 8 Lines 13-41*].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Negishi to supply data signals to each of the plural data lines with a signal electrode drive circuit instead of two signal electrode drive circuits, by supplying data signals sequentially to each of the plural data lines rather than supplying data signals to two data lines simultaneously and to drive the scanning lines sequentially, as

taught by Nose, to reduce the number of driving circuits required to drive a display, and thus to provide more space for display area.

As to **claim 2**, Negishi teaches in one vertical period, an application time of a positive polarity potential ("*former half of every 1-field interval*") and an application time of a negative potential ("*latter half of every 1-field interval*") of the image signal supplied to each data line being substantially equal [*Col. 26 Lines 39-45* and *Lines 54-60*].

As to **claim 3**, Negishi [*Fig. 16*] teaches in one vertical period ("*1-field interval*"), two pixel groups corresponding to two adjacent scanning lines being in a condition where a potential of the same polarity being written for a time of not less than 50% of the one vertical period.

As to **claim 4**, Negishi does not teach the unit period in which the polarity of the image signal is inverted to correspond to one horizontal period.

However, Negishi as modified by Nose [*Fig. 1*] discussed with respect to the rejection of claim 1 would result in supplying positive polarity potential to a scanning line (ex. *Nose*: "*G1*") for first horizontal period and negative polarity potential to another scanning line (ex. *Nose*: "*Gj*") for second horizontal period which is adjacent to the first horizontal period.

Therefore, Negishi as modified by Nose discloses the unit period in which the polarity of the image signal is inverted to correspond to one horizontal period.

As to **claim 5**, Negishi as modified by Nose teaches the liquid crystal device (*Negishi*: "*liquid-crystal display apparatus*"), wherein when the number of the plural scanning lines is 2m (*Nose* [*Fig. 1*]: "*n*") lines, said driver section supplies a pulse signal

rising at a timing corresponding to the application period of said positive polarity potential to a predetermined scanning line (*Nose* [*Fig. 1*]: "*G1*"), and then supplies a pulse signal rising at a timing corresponding to the application period of the negative polarity potential to a scanning line separated by m lines from said predetermined scanning lines (*Nose* [*Fig. 1*]: "*Gj*"), and thereafter repeats the aforementioned operation, to thereby write a potential of the same polarity to pixel groups corresponding to adjacent scanning lines for each two horizontal periods.

As to **claim 6**, Negishi as modified by Nose teaches the liquid crystal device (*Negishi*: "*liquid-crystal display apparatus*"), wherein when the number of the plural scanning lines is 4m lines (*Nose* [*Fig. 11*]: "*n*"), the driver section supplies a pulse signal rising at a timing corresponding to the application period of the positive polarity potential to a predetermined scanning line (*Nose* [*Fig. 11*]: "*G1*"), supplies a pulse signal rising at a timing corresponding to the application period of the negative polarity potential to a scanning line (*Nose* [*Fig. 11*]: "*Gn/4+1*") separated by m (*Nose* [*Fig. 11*]: "*n/4*") lines from the predetermined scanning line (*Nose* [*Fig. 11*]: "*G1*"), supplies a pulse signal rising at a timing corresponding to the application period of the positive polarity potential to a scanning line (*Nose* [*Fig. 11*]: "*Gn/2+1*") separated by 2m (*Nose* [*Fig. 11*]: "*n/2*") lines from said predetermined scanning line and supplies a pulse signal rising at a timing corresponding to the application period of the negative polarity potential to a scanning line (*Nose* [*Fig. 11*]: "*G3n/4+1*") separated by 3m (*Nose* [*Fig. 11*]: "3*n/4*") lines from the predetermined scanning lines, and thereafter repeats the aforementioned

operation, to thereby write a potential of the same polarity to pixel groups corresponding to adjacent scanning lines for each four horizontal periods.

As to **claim 7**, Negishi [*Fig. 12*] teaches a frame memory ("*memory unit 124*") which temporarily stores image data and then reads out the image data for writing to a pixel in accordance with a scanning sequence of said scanning lines, being provided in said driver section ([*Fig. 10*] and [*Fig. 11*]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal electrode drive circuit 113*", "*scanning electrode drive circuit 110*", and "*video signal generator 9*") [*Col. 22 Lines 24-33*].

As to **claim 8**, Negishi [*Fig. 11*] teaches a liquid crystal device ("*liquid-crystal display apparatus*") comprising plural pixels provided in an array inside an image display area, and a driver section ([*Fig. 10*] and [*Fig. 11*]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal electrode drive circuit 113*", "*scanning electrode drive circuit 110*", and "*video signal generator 9*") which matrix-drives said pixels, wherein

said driver section [*Fig. 10*] divides one field data ("S_{V1}") into plural consecutive field data ("S_{VU}" and "S_{VL}"), and alternatively writes in each one horizontal period (writing a portion of a field data sequentially on pixels located at the intersection of "*upper scanning electrodes* X_1" and one of "*a plurality of upper signal electrodes* Y_1, Y_2, ..., Y_N") while shifting a write commencing time within one vertical period, and inverts the write polarity of the data between consecutive fields ("S_{VU}" and "S_{VL}") [*Fig. 16*].

As to **claim 9**, Negishi [*Figs. 10*, *11* and *12*] teaches a driver section ([*Fig. 10*] and [*Fig. 11*]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal*

electrode drive circuit 113", "*scanning electrode drive circuit 110*", and "*video signal generator 9*") including a memory ("*memory unit 124*"), when writing one field data as consecutive first and second two field data ("*SvU*" and "*SvL*"), writes an image signal input ("*Sv1*") from the outside as is as a first field data, while doing this stores this image signal in said memory ("*memory unit 124*") to create a second field data ("*SvM*") which is delayed with respect to said image signal [*Col. 12 Lines 39-46*], writes said first and second field data for each one horizontal period, and at the same time, inverts the polarity of the second field data with respect to the first field data [*Fig. 16*].

Negishi does not teach the driver section to write the first and the second field data alternatively for each one horizontal period.

However, Nose [*Fig. 1*] teaches a method of driving each of a plural scanning lines ("*scanning lines 2*") at a different timing, driving each of a plural data lines ("*signal lines 3*") sequentially corresponding to the different driving timing for each of the plural scanning lines, and writing the first (the data signals applied to the scanning lines "*G1*" through "*Gj-1*") and the second field data (the data signals applied to the scanning lines "*Gj*" through "*Gn*") alternatively for each one horizontal period.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Negishi to supply data signals to each of the plural data lines with a signal electrode drive circuit instead of two signal electrode drive circuits, by supplying data signals sequentially to each of the plural data lines rather than supplying data signals to two data lines simultaneously and to drive the scanning lines sequentially, as

taught by Nose, to reduce the number of driving circuits required to drive a display, and thus to provide more space for display area.

Furthermore, Negishi [*Fig. 11*] as modified by Nose would result in writing the first and the second data signals alternatively on upper display area ("*110a*") and lower display area ("*110b*").

As to **claim 10**, Negishi teaches a liquid crystal device ("*liquid-crystal display apparatus*") comprising plural data lines ("*a plurality of upper signal electrodes* Y_1, Y_2, ..., Y_N" and "*a plurality of lower signal electrodes* Y_{11}, Y_{22}, ..., Y_{NN}"), plural scanning lines ("*a plurality of upper scanning electrodes* X_1, X_2, ..., X_M" and "*a plurality of lower scanning electrodes* X_{M+1}, X_{M+2}, ..., X_N ") intersecting the data lines, plural pixels provided in an array inside an image display area, by corresponding to intersections of respective data lines and scanning lines, and a driver section which matrix-drives said pixels [*Col. 20 Lines 47-63*] , wherein

said driver section ([*Fig. 10*] and [*Fig. 11*]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal electrode drive circuit 113*", "*scanning electrode drive circuit 110*", and "*video signal generator 9*") comprises a data driver (a combination of "*upper signal electrode drive circuit 112*" and "*lower signal electrode drive circuit 113*") which supplies an image signal for which the polarity is inverted into a positive polarity potential or a negative polarity potential for each unit period ("*half-field interval*"), to each of said plural data lines [*Figs. 16*] [*Col. 26 Lines 39-45* and *Lines. 54-61*], and a scanning driver ("*scanning electrode drive circuit 110*") which sequentially

shifts a gate-output pulse ("*CVU*" and "*CVL*") in synchrony with a clock signal ("*SYNC*") which rises for each one horizontal period [*Col. 22 Lines 6-23*], and

said scanning driver outputs n gate-output pulses within one vertical period ("*field interval*") in a picture signal, alternatively shifts each of said gate-output pulses in synchrony with said clock signals ([*Fig. 16*]: Negishi's scanning electrodes are sequentially driven in either of upper region or lower region of the display), and also allocates to respective scanning lines, either one of alternatively rising m enable signals ("*O/E1*" and "*O/E2*") [*Fig. 11*], to thereby control the output of the scanning signals to respective scanning lines [*Col. Lines 18-26*].

Negishi does not teach the data driver to supply an image signal for which the polarity is inverted into a positive polarity potential or a negative polarity potential for each one horizontal period.

However, Nose [*Fig. 1*] teaches a method of driving scanning lines ("*scanning lines 2*") sequentially and supplying image signals to signal lines ("*signal lines 3*") sequentially corresponding to each driven scanning lines [*Col. 8 Lines 13-41*].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Negishi to supply data signals to each of the plural data lines with a signal electrode drive circuit instead of two signal electrode drive circuits, by supplying data signals sequentially to each of the plural data lines rather than supplying data signals to two data lines simultaneously and to drive the scanning lines sequentially, as taught by Nose, to reduce the number of driving circuits required to drive a display, and thus to provide more space for display area.

Negishi modified by Nose [*Fig.1*] would result in the data driver to supply an image signal for which the polarity is inverted into a positive polarity potential or a negative polarity potential (*Negishi*: the polarity of data signals supplied to scanning lines X_1 through X_M is positive while the polarity of data signals supplied to scanning lines X_{M+1} through X_N is negative) for each one horizontal period.

As to **claim 12**, Negishi as modified by Nose [*Fig. 14*] teaches the liquid crystal device (*Negishi*: "*liquid-crystal display apparatus*"), wherein in said scanning line driver (*Negishi*: "*scanning electrode drive circuit 110*"), at the same time, four gate-output pulses (*Nose*: "*VG1*", "*VGn/4+1*", "*VGn/2+1*", and "*VG3n/4+1*") are sequentially output to positions which are shifted by the position corresponding to ¼ of a vertical period in the picture signal,

when the image display area [*Nose*: *Fig. 15*] is divided into first through fourth four display areas from an upper stage side along a scanning line array direction, and

said scanning signal is alternatively output to said first through fourth display area ("*G1*" through "*Gn/4*", "*Gn/4+1*" through "*Gn/2*", "*Gn/2+1*" through "*G3n/4*", and "*G3n/4+1*" through "*Gn*").

Negishi as modified by Nose does not disclose expressly four enabling signals controlling the driving sequence of the display.

it would have been obvious to one of ordinary skill in the art at the time of the invention to include four enable signals instead of two enable signals, which provide an equivalent function as the two enable signals provide, to drive four display section sequentially as taught by Nose.

Furthermore, the courts have held that "a mere duplication of the components of the device is generally recognized as being within the level of ordinary skill in the art". St. Regis Paper Co. v. Bemis Co. Inc. 193 USPQ 8, 11 (7TH Cir. 1977).

As to **claim 14**, Negishi [*Figs. 10, 11* and *12*] as modified by Nose teaches the liquid crystal device ("*liquid-crystal display apparatus*"), wherein a memory ("*memory unit 124*") is provided in said driver section ([*Fig. 10*] and [*Fig. 11*]: a combination of "*upper signal electrode drive circuit 112*", "*lower signal electrode drive circuit 113*", "*scanning electrode drive circuit 110*", and "*video signal generator 9*"),

while an image signal input ("*SV1*") form the outside is being supplied to said data driver, the image signal is also stored in said memory, and

said data driver alternatively supplies in each of the one horizontal periods, an image signal input from the outside ("*SV1*"), and image data read out from said memory ("*SVM*"), an also inverts the polarity of the image data read out from said memory with respect to image signal to thereby supply an image signal for which the polarity is inverted into the positive polarity potential or the negative potential for each one horizontal period, to each of said plural data lines [*Col. 22 Lines 24-33*].

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

As to **claim 16**, all of the claim limitations have already been discussed with respect to the rejection of claim 2.

As to **claim 17**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

As to **claim 18**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 19**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

As to **claim 20**, all of the claim limitations have already been discussed with respect to the rejection of claims 6.

As to **claim 21**, Negishi does not expressly disclose the skip scanning of the scanning line being performed at a frequency of not less than 100Hz.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to specify or set the limitation for the value of the scanning frequency to be not less than 100 Hz since driving two display portions which are separated each other with a low frequency causes flicker problem, and thus interferes the expected operation of the display.

As to **claim 22**, all of the claim limitations have already been discussed with respect to the rejection of claim 8.

As to **claim 23**, all of the claim limitations have already been discussed with respect to the rejection of claim 9.

As to **claim 24**, Negishi teaches a projection type display apparatus ("*liquid-crystal display apparatus*") comprising a light modulation device [*Fig. 11*] which modulates light.

Negishi does not expressly disclose the projection type display apparatus to comprise an illumination device and a projection device.

However, it is inherent to include an illumination device generating a light and a projection device projecting the light in a liquid-crystal display since the driving circuits for scanning and signal electrodes are for controlling the arrangement of the liquid-crystals to adjust the amount of the light passing through the liquid crystals only and are not capable of generating and projecting a light.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

An et al. (U.S. Pat. No. 6,335,719 B1) teaches a liquid crystal panel driving apparatus being adaptive for stably keeping a picture quality independently of picture pattern.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

2006/02/17
S.M.

AMR A. AWAD
PRIMARY EXAMINER